

US009409278B2

US 9,409,278 B2

Aug. 9, 2016

## (12) United States Patent

Deleris et al.

(54) METHOD AND SYSTEM FOR THE PLY-BY-PLY MACHINING OF A COMPONENT MADE OF COMPOSITE MATERIAL, BY APPLYING ENERGY

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 0 days.

(21) Appl. No.: 14/394,775

(22) PCT Filed: Apr. 12, 2013

(86) PCT No.: PCT/EP2013/001066

§ 371 (c)(1),

(2) Date: Oct. 16, 2014

(87) PCT Pub. No.: **WO2013/156124** 

PCT Pub. Date: Oct. 24, 2013

(65) **Prior Publication Data** 

US 2015/0099422 A1 Apr. 9, 2015

(30) Foreign Application Priority Data

(51) Int. Cl.

B24C 1/04 (2006.01)

B29C 73/26 (2006.01)

B29C 73/10 (2006.01)

G01N 21/88 (2006.01)

G01N 21/84 (2006.01)

(52) U.S. Cl.

CPC . **B24C 1/04** (2013.01); **B29C 73/26** (2013.01); B29C 73/10 (2013.01);

B29C 2073/264 (2013.01); G01N 21/8806 (2013.01); G01N 2021/8438 (2013.01); G01N 2021/8472 (2013.01)

(58) Field of Classification Search

CPC ............ B24C 1/04; B29C 73/26; B29C 73/10; B29C 2073/264; G01N 21/8806; G01N 2021/8438; G01N 2021/8472

See application file for complete search history.

(10) Patent No.:

(56)

(45) **Date of Patent:** 

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#### (57) ABSTRACT

The invention relates to machine a component made of composite material in order to eliminate singularities, defects or damage to the component using a method that is repeatable and adaptable. To do this, it is proposed that the defects and their type be identified by image processing of the surface of the component and that the local machining rates at which the plies are machined be regulated at the function of this identification. According to one embodiment, a system (10) for the ply-by-ply machining of defects of a component made of composite material includes a numerical data processing unit (1) combined with a sweep control (2) that commands the sweep of a high-pressure water jet machine (20), and an image formation assembly (3) including an image capturing device (30, 31) connected with the numerical processing unit (1). The processing unit (1) includes regulating devices (11. 13) indexing local sweep rates, by convergence of brightness levels (NB) from the successive sweeps, these being formed by the image capturing assembly (3) toward making the brightness uniform according to a model (Mr) correlating brightness to ply state typology identification (BT) that can be supplied by a library (4). The correlation data (BT) and brightness levels (NB) are stored in memory modules (12, 14)of the processing unit (1).

### 12 Claims, 4 Drawing Sheets

